PFotos 1.5 User's Manual

Tiger Graphics

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1 PFotos - Intro

The development of **PFotos** was motivated by a lack of image database statistics in most of image processing and organizing tools like Adobe Lightroom, Adobe Photoshop, Phase One's Capture One and a lot of more not to be listed here.
PFotos was inspired by Lightroom Dashboard[1] but hopefully provides some extended features. The goal was to make a stand-alone application that provides statistics on cameras, lenses, aperture and more image information taken from the EXIF data embedded in the images. Of course, the extraction of those information should act non-destructive on the images and should work on large catalogues or directory structures for comfort of the user.
Tiger Graphics PFotos was developed under **MacOS High Sierra (10.13)** and **OpenSuse Linux 15.1** in Tcl/Tk, the extraction of EXIF data is done by the famous exiftool developed by Phil Harvey[2]. Exiftool shall be installed on **MacOS** and **OpenSuse Linux** , either from the repositories of the distribution or from the installation packages from the before mentioned website.
Additionally, **PFotos** was ported to Microsoft Windows 10, which was the most challenging task and resulted in the decision to embed the exiftool executable in the **PFotos**

[1] www.lightroomdashboard.com
[2] https://exiftool.org/

structure for a flawless integration up to **PFotos** 1.4.
With **PFotos** 1.5 the exiftool can be installed and updated separately.
Additionally, the integration of two more tools was implemented: ImageMagick[3] and DCRaw[4].
Please refer to the section Preferences for details.

2 Requirements, Download and Installation

2.1 Requirements

2.1.1 Operating systems

- **MacOS High Sierra (10.13)** or higher
- **OpenSuse Linux 42.2** or higher
- **Microsoft Windows 10**

older versions may also work (64-bit OSes assumed; 32-bit Linux installations should work, 32-bit Windows-Variants might work but cannot be supported due to a lack of reference installations on our side)

2.1.2 Software requirements

It was announced by Apple that the **Tcl/Tk** package will be removed from the standard installation of **MacOS** with one of the next versions.
Thus, we announce and recommend to install **Tcl/Tk 8.6.9** (or higher) from the internet repositories (see below), even on **MacOS High Sierra (10.13)** .
The support for **Tcl/Tk 8.5** will stop from **PFotos** version 1.4 on.

- Tcl/Tk: **Tcl/Tk 8.6.8** is required from **MacOS Big Sur (11.3)** on. Please obtain the package from https://www.activestate.com/activetcl/downloads according to your desired licence model.
- libtcl: according to the installed Tcl/Tk version (already included in the **MacOS** and the **Microsoft Windows** Tcl/Tk packages)

[3] https://www.imagemagick.org/
[4] https://github.com/ncruces/dcraw

- exiftool: Version 10.79 or newer

2.2 Download

PFotos can be found on our private webserver:
https://tigergraphics.homelinux.org/software.php

2.3 Installation

The installation procedures are currently not as comfortable as we are looking for. But the first goal was to make the application available. We are looking for installers for the different operating systems to make things easier and fail-safe with follow-up versions.

2.3.1 Linux

First, install the packages **Tcl/Tk** , `libtcl` and exiftool according to the procedures of your Linux distribution. Then, copy the file `pfotos.tar.gz` to the directory where you want to install it (and where you do have the necessary permissions). Extract it by

```
tar -xzvf  pfotos.tar.gz
```

Open a command terminal in the directory `PFOTOS` and type the command

```
./pfotos.tcl
```

For more convenience, please generate a so called starter icon for your desktop according to the procedure for your Linux distribution.

2.3.2 MacOS

Install the exiftool from the installation package. To check the correct installation of exiftool open a Terminal window and execute the command `exiftool`. The manual page of `exiftool` shall be shown.
Finally, copy the application container `PFotos.app` either to the system's application Folder `Programs` or to any other desired location and simply start the application like any other one.

2.3.3 Windows

Unpack the `pfotos.zip` archive and run `pfotos_setup.exe` to install **PFotos** . Install the `exiftool` (https://www.ses-martin.fr/chamilo/vendor/phpexiftool/exiftool/html) and take care to rename it from `exiftool(k).exe` to `exiftool.exe`. Otherwise the tool would only show its help pages.

2.3.4 What is new

PFotos 1.5

After a new cross platform ExifToolGUI was released at https://hvdwolf.github.io/jExifToolGUI/ the decision was made to enable **PFotos** to transfer images to that tool. It must be considered, that those pieces of software are made to modify image meta data. So please take care of your image originals.
Unfortunately, the author informed that the development of and the support for ExifToolGUI has stopped. Please check whether one of the still available installation packages still fit for your operating system.
Also new in the preferences tab is the possibility to to make use of ImageMagick and DCraw in **PFotos** as far as they are installed on your computer.

Since it is not possible to select executables in application containers on **MacOS** it was obvious to enable direct path entries for the external tools used by **PFotos** . This is visible in the preferences tab which have been rearranged a little for better overview.
As a consequence, it is no longer necessary to include the exiftool by Phil Harvey in the **PFotos** package for **Microsoft Windows** . See the Windows section above.
Additionally, the preferences tab of **PFotos** has been re-rearranged for a little better overview.

PFotos 1.4

New feature: New tab for histogram bins for hour of day – 24 bin for each hour of a day
Update: exiftool: Version 12.25 included in the **Microsoft Windows** package

PFotos 1.3

New feature: Histogram of image quantity over time
Bugfix: Export of current selection corrected (mismatch to internal data structure repaired)
Update: exiftool: Version 11.76 included in the **Microsoft Windows** package

PFotos 1.2

New feature: EXIF information of individual images can be stored as plain text
New feature: The operating system's default file browser can be launched at the individual images' parent directories

PFotos 1.1

New feature: User customizable settings for foreground (text) and background color

New feature: Search and Marking functionality in the detailed EXIF information window
Update: exiftool: Version 11.23 included in the **Microsoft Windows** package

PFotos 1.0

New feature: In the tiled selection view, mouse over gets the short EXIF information displayed as tool tip.
Fixed UTF-8 issue for **Microsoft Windows** when displaying detailed EXIF information.

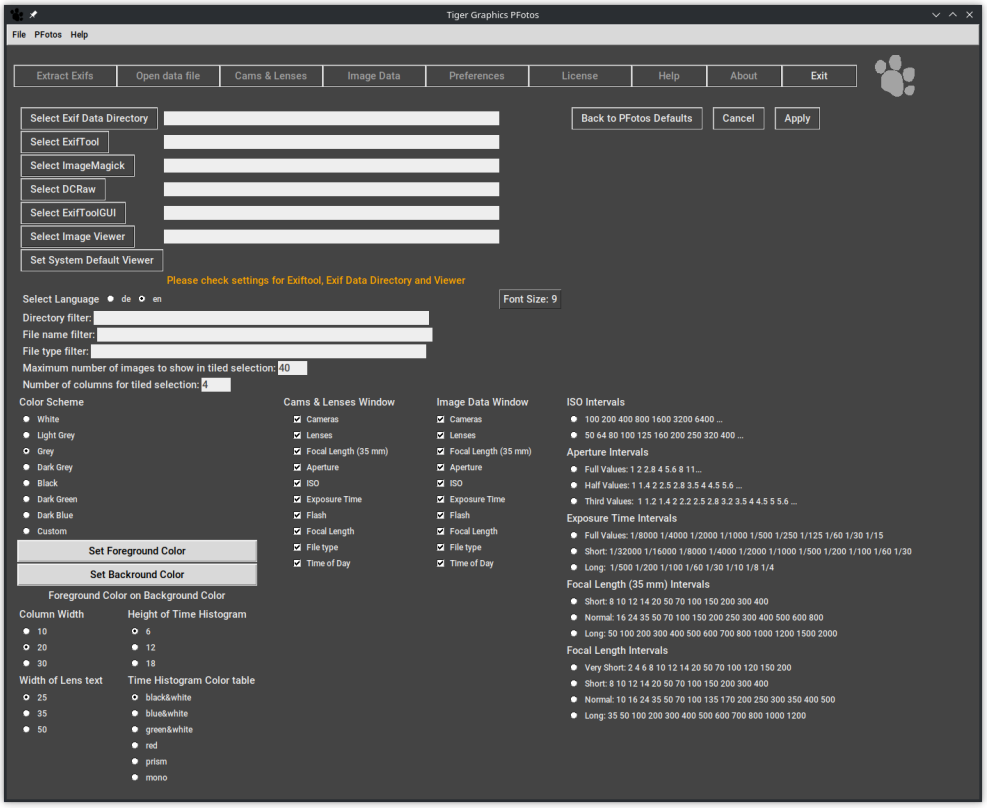
3 First Start

3.1 Starting PFotos

Linux: After installation **PFotos** can be started from any directory by the command `PATH_TO_PFOTOS/pfotos` from the commandline or by using the starter link.
MacOS : By starting the **PFotos** App by double clicking, as normal.
Windows 10: By double clicking the symbol, as normal.

3.2 First Steps

When **PFotos** is started for the first time on your computer, you will be directed to the `Preferences` tab to do some necessary preparations. First, the path to the **PFotos** data directory needs to be defined; in that directory, all the extracted EXIF-data from the inspected image directories will be stored. For details please have look into the settings section.



The Preferences Tab at first start to do some essential settings

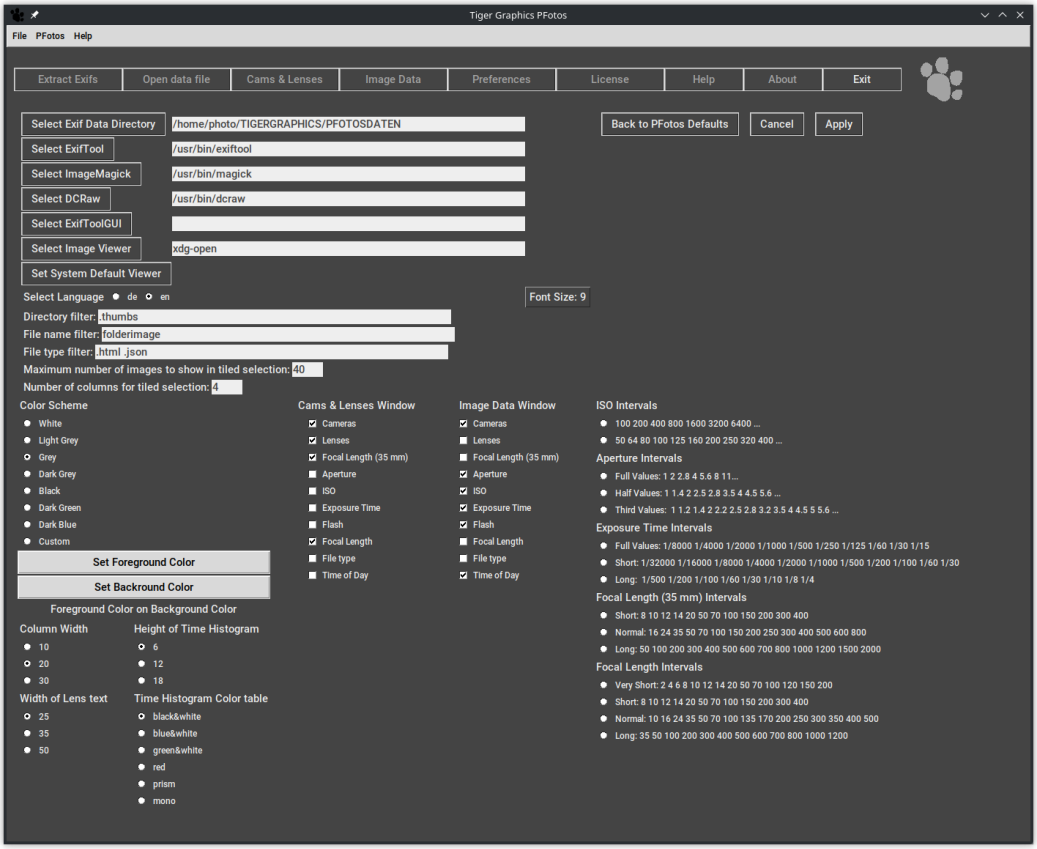
A second important point is to select an image viewer on **Microsoft Windows** and **Linux** platforms. For **MacOS** , the default method `open` is the best selection and can simply be confirmed, but on Linux the system's default method `xdg-open` refers to the MIME-settings for the different image types which may lead to some strange results for RAW images. Such, it is recommended to select your preferred image viewer hopefully capable to show all your cameras' RAW images. For Windows platforms we need the path to and the executable of one of the many probably installed image viewers. Maybe in later versions, we will be able to use the systems default; but it is currently not fully understood how to access it.

As mentioned above it now requested to locate the executable for the exiftool. Otherwise **PFotos** will not work. Also the ExifToolGUI should be located, but this is not mandatory to get **PFotos** working.

All here requested setting can be done by browsing through the system after clicking the respective `Select...` button or by directly typing the full path of the direc-

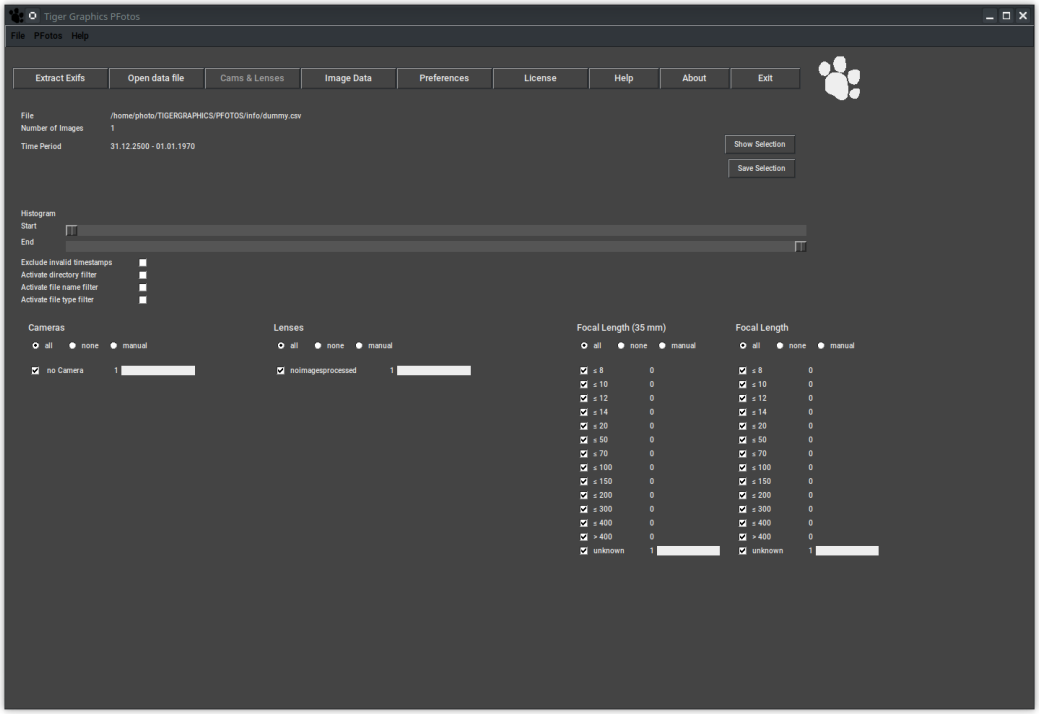
tory/executable.

After having done these first selections, it is ok to proceed by clicking `Apply` and you will be directed to the `Cams & Lenses` tab.



The Preferences Tab with some senseful settings (on Linux)

Obviously, after the very first installation, there are no **PFotos** data available and the included dummy data set is selected automatically.



The Cams and Lenses Tab with the dummy data set loaded

4 Extracting Exifs

Now it is time to generate the first **PFotos** data file.

Button Extract Exifs: Select the directory which shall be analyzed. All subdiretories will be considered. This will take some time but must be done only once until new images are added somewhere in that directory structure. On **MacOS** and **OpenSuse Linux** the progress of the extraction process will be shown by an increasing list of file names of images beeing analyzed. Due to limitations of **Tcl**/**Tk** on **Microsoft Windows** platforms the output window stays empty during the process but shows the complete result of the process, when finalized.

By finalization of the analysis process, the `OK` button gets activated and clicking on it will close the the windows and proceed to the `Cams & Lenses` tab where the just generated **PFotos** data file is loaded and the information is shown.



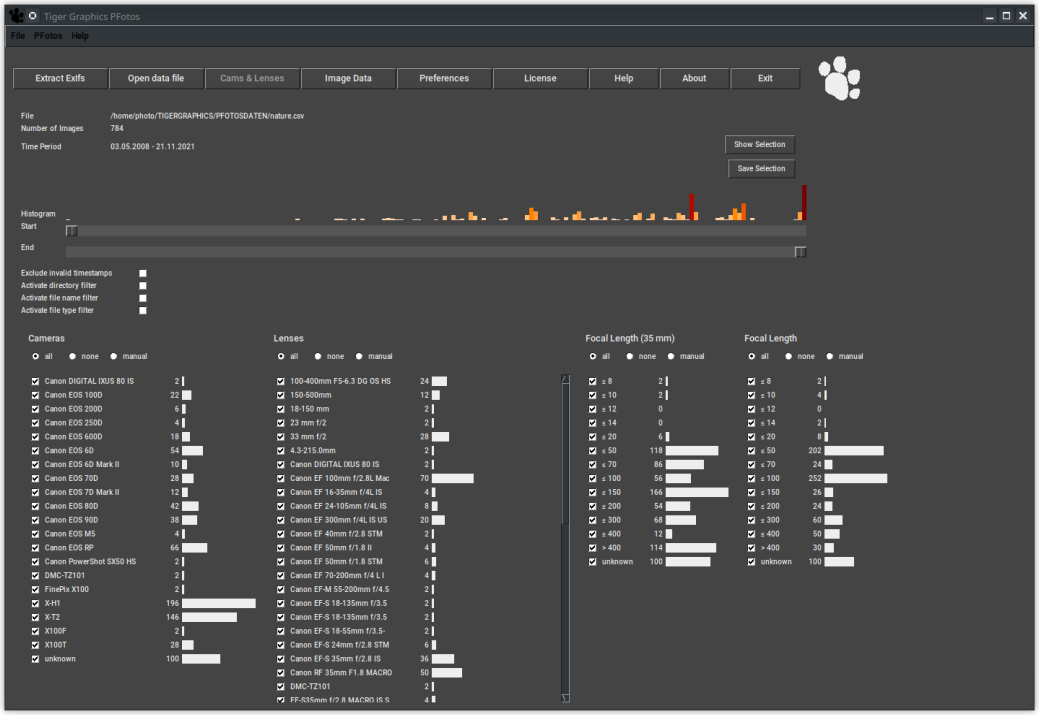
Sample output of the EXIF data extraction

4.1 Drag & Drop

PFotos is prepared to process selections of images and/or folders by dragging those selection from file managers (the Explorer on **Microsoft Windows** , Finder on **MacOS** and similar tools on **OpenSuse Linux**) to the **PFotos** application. For **Microsoft Windows** the the drag&drop functionality is available directly after installation with the "create desktop icon" feature beeing activated. For **MacOS** it is necessary to move the **PFotos** application to the Applications folder to activate the drag&drop feature. For Linux, please create a starter icon for the desktop and make sure, that the `\%F` option is given. Please try to modify the included starter accordingly.

5 Information Types

PFotos currently provides two main tabs showing configurable sets of information types in so called bins. The different bins accumulate the information gathered from the EXIF data file in the following categories.



The Cams and Lenses Tab with a meaningful data set loaded

5.1 Cameras

The `Cameras` bin shows all different camera types appearing in the selected data file and assignes the amount of images taken with each camera by the number and an according 'histogram' bar. The camera name or denomination is taken from the EXIF `Model` data field. It is not further processed, except a `-` is replaced by the word `unknown`.

5.2 Lenses

The `Lenses` bin shows all different lenses appearing in the selected data file and assignes the amount of images taken with each lens by the number and an according 'histogram' bar. The lens name or denomination is taken from the EXIF `LensID` data field or from `LensModel` or finally from `LensType` if the others are `-`, `n/a`. If nothing can be found (as for compact cameras or smart phones), the camera identifier is put into this data field, instead. Some lenses from second manufacturers come with firmware chips from the OEM of the original lens type and exiftool provides two alternatives in the identifier like `OEM Lens Type or Second Manufacturer Lens Type`. In this case the Second Manufacturers entry is chosen. Finally, all `[` and `]` are removed from the data field due to making trouble in Tcl by being interpreted as tcl command delimiters.

5.3 Flash

The `Flash` bin shows the histograms of whether a flash was fired for an image or not. The histogram bins are pre-defined to `yes` and `no`. The flash value is taken from the EXIF `Flash` data field and the evaluation looks for the appearance of the word `fired` in that data field – EXIF provides something like 13 variants of information for a flash being fired. We currently don't distinguish all those variants.

5.4 File Type

The `File Type` bin shows the histograms of file types as they are derived from the image file name. All file types included in the selected data file are shown in this list as they appear in the surveyed directory structure. Non image file types should be deselected before looking into the selection. Exiftool will do its best to get information but will fail on unsupported file types.

5.5 Focal Length (35mm)

The `Focal Length (35mm)` shows the histograms of the 35mm equivalent focal lengths the images were taken with. The histogram bins are pre-defined and can be

selected in the preferences tab. The 35mm equivalent focal length value is taken from the EXIF `FocalLength35efl` data field.

5.6 Focal Length

The `Focal Length` shows the histograms of the physical focal lengths the images were taken with. The histogram bins are pre-defined and can be selected in the preferences tab. The focal length value is taken from the EXIF `FocalLength` data field.

5.7 Aperture, ISO and Exposure Time

The `Aperture`, `ISO` and `Exposure Time` show the histograms of the aperture, cameras ISO setting and the exposure time (in fractions of a second the images were taken with. The histogram bins are pre-defined and can be selected in the preferences tab. The values are taken from the EXIF `Aperture`, `ISO` and `ShutterSpeed` data field.

5.8 Hour of Day

The `Hour of Day` shows the histograms of the hours of a day when images were taken. The histogram bins are 24-hours pre-defined. The values are taken from the EXIF `DateTimeOriginal` data field.

5.9 Information on sorting data

All bins with numerical content are sorted from smaller values on top to larger values at the bottom. The displayed bin values stand for all values up to and equal the shown value. E. g. the focal length 100mm bin counts all images taken with a folcal length up to and equal 100mm. If data sets are detected with values larger than the largerst shown numerical value they are accumulated in the `other` histogram bin.

5.10 Date and Time

Date and time information are also extracted from the images from the EXIF `DateTimeOriginal` data field. These data are not shown in a bin but are determining the horizontal sliders to adjust the selection by start time and end time. If no date and

time information can be derived from the EXIF data, **PFotos** sets `1970:01:01 -- 00:00:00` as the image's time stamp.

6 Cams and Lenses and Image Data

From the preferences pane it is possible to assign any combination of the available bins to either the `Cams & Lenses` tab and the `Image Data` tab. Please adjust according to your desires. Currently the order of appearance of the bins is fixed and only a selection in which tab and whether a bin should appear is possible.

6.1 Information

`File`: right hand of the label the name of the selected csv data file is displayed.
`Number of Images`: right hand of the label the number of images of the applied selection is shown. As soon as any filtering is active, the displayed number will change its color to orange.
`Time Period`: right hand of the label the adjusted time period of the applied selection is shown. As soon as one of the time sliders `Start` or `End` has been moved the display of the time period will change its color to orange.

6.2 Time Sliders

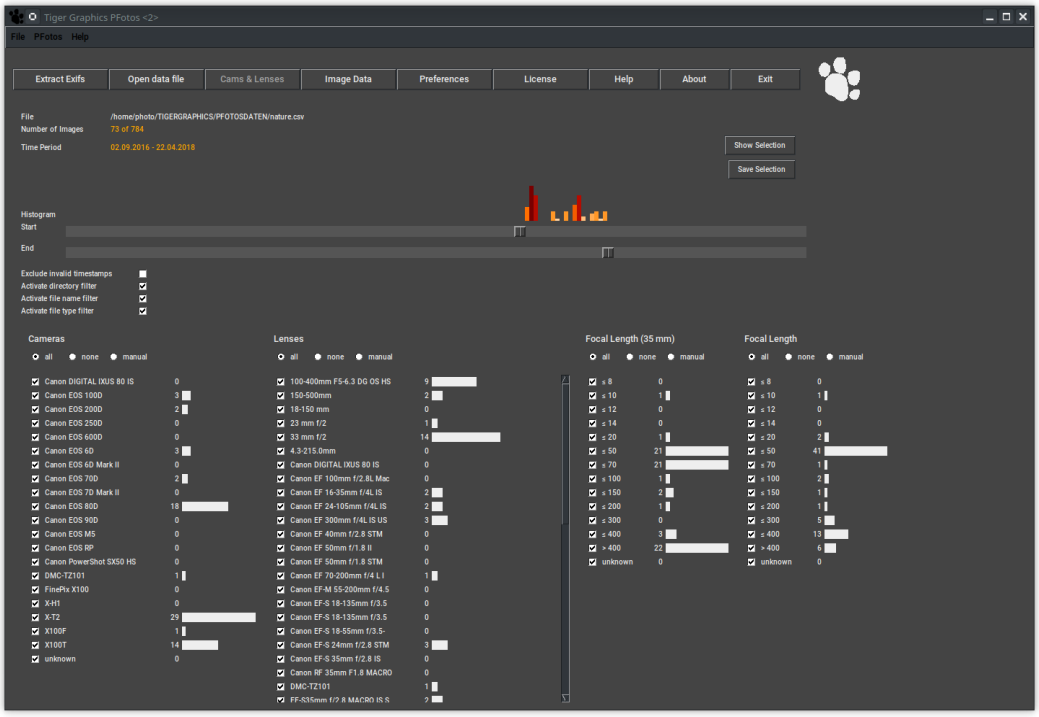
The time sliders allow to filter a time window from the complete data set. The `Start` slider represents the first date to be regarded for all shown histograms; the `End` slider selects the last date. By default they are set to the earliest respectively the latest date from the selected data file. During moving the sliders, the time period display is updated; after release of the slider the data filtering is applied and the histograms get updated. Images withninvalid time stamps (e. g. from scanners or with removed EXIF information) do not influence the time sliders but are included in the histogram bins. They can be excluded by using the `Exclude invalid time stamps` checkbutton (see below).

6.3 Time Histogram

Above the time sliders a histogram of image quantity is shown. Maximum 200 histogram bins are set up. The period of these histogram bins is determined from the total period of the current data set and the number of histogram bins.

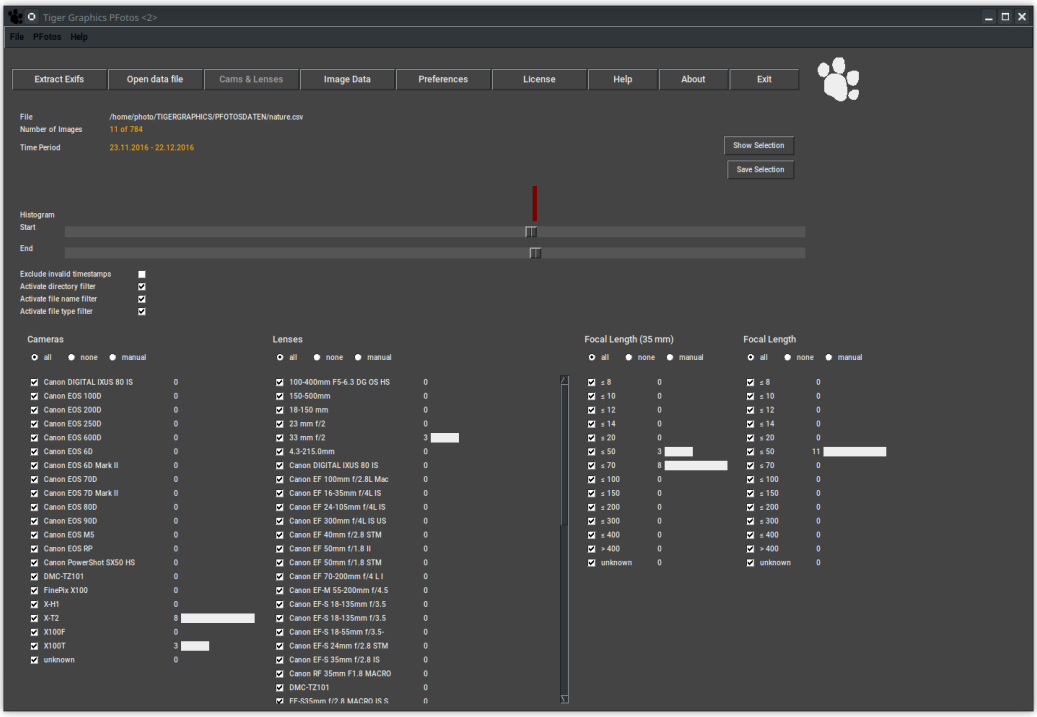
When putting the mouse cursor on one of these histogram bins, the end time of that bin is shown.

Note: If only one bin results from a dataset no histogram is shown.



Selection by time period

By double clicking on a histogram bar, the time sliders are adjusted to the period in time represented by the the histogram bar. A second double click restores the settings of the time sliders.

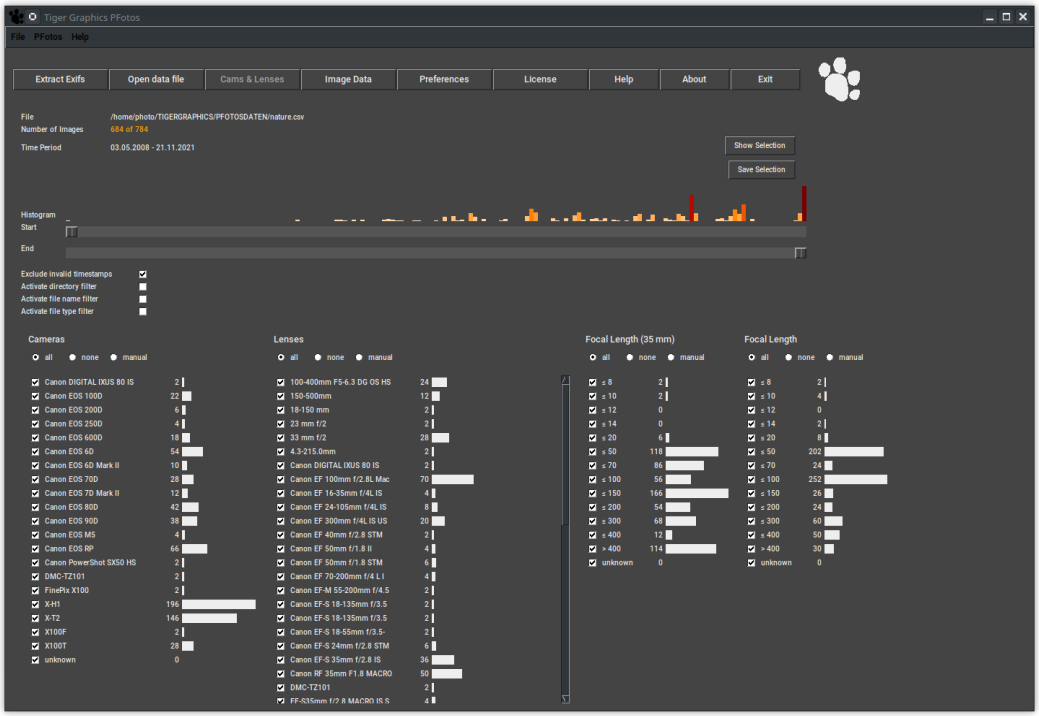


Selection after double clicking a histogram bar

6.4 Exclusion of files with no time information

Below the time sliders the checkbutton `Exclude invalid time stamps` is placed. Activating this button, all images are excluded that do not have any valid time information in their EXIF data set. Typically, those images come from very old digital cameras or from scanners (flat bed scanners or slide scanners); also downloaded image files may show this lack of information. **PFotos** sets the date of those files to `1970:01:01 -- 00:00:00`

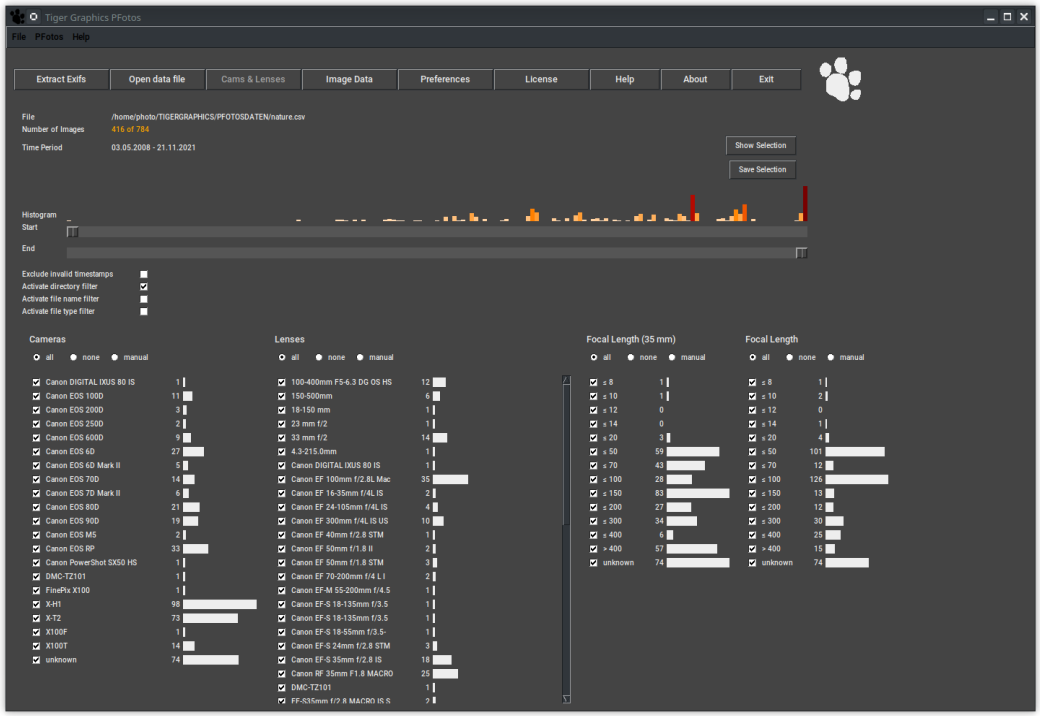
Activation of this checkbutton will exclude those images and will adjust the time period of the sliders accordingly. Unchecking this button restores the full time period.



Exclusion of images with invalid time information activated

6.5 Exclusion of files in predefined directories

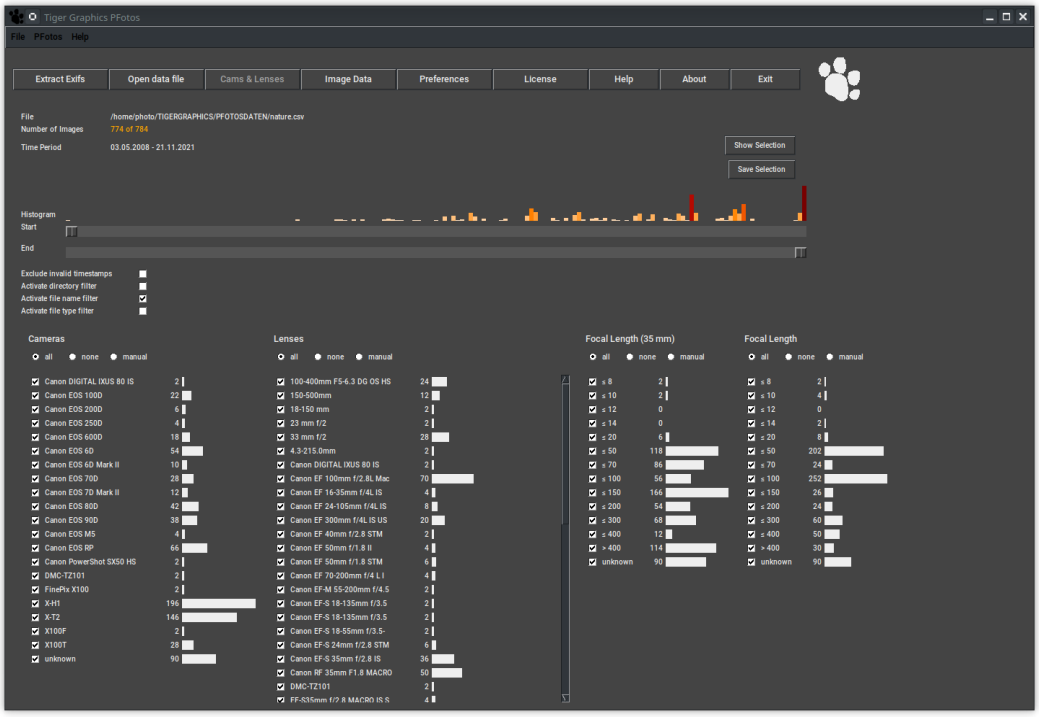
Below the time sliders the checkbutton `Activate directory filter` is placed. Activating this button, all files are excluded that are located in a directory from the list defined in the `Directory filter` entry in the preferences tab. Typically, those directories are `thumb` or similar mostly being generated from others tools. Unchecking this button de-activates the filtering.



Exclusion of images in defined directories

6.6 Exclusion of predefined file names

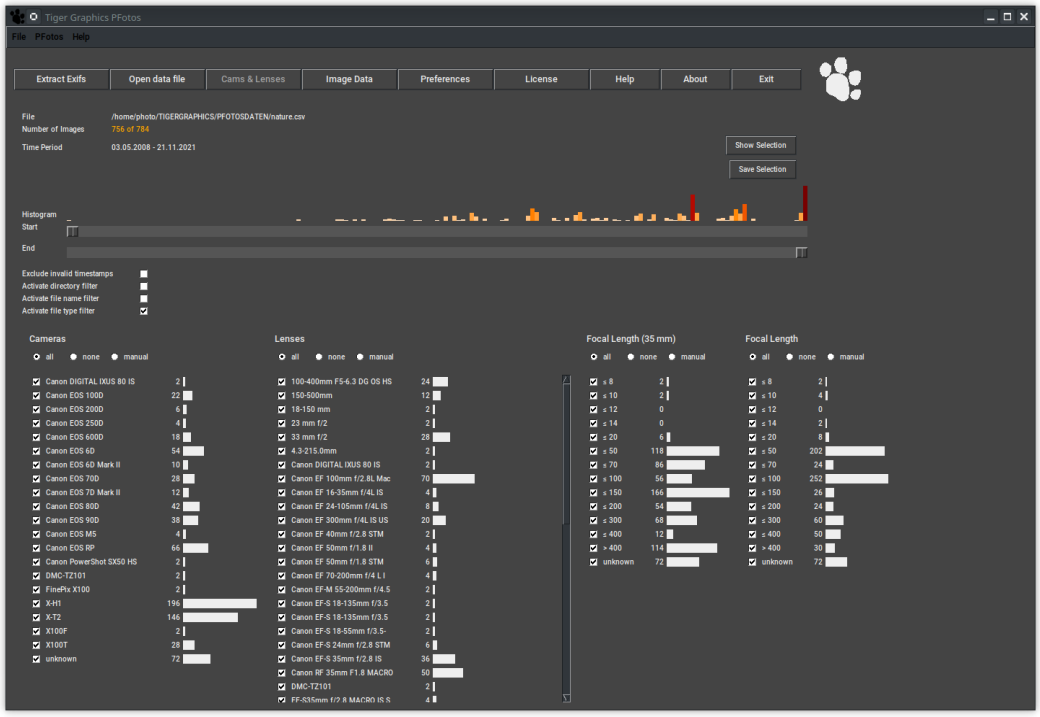
Below the time sliders the checkbutton `Activate file name filter` is placed. Activating this button, all files with root names are excluded that are from the list defined in the `File name filter` entry in the preferences tab. Typically, those file names are `folderimage`,`icon` or other standard names from image managing tools. Please separate the entries with a white space. Unchecking this button de-activates the filtering.



Exclusion of files of defined names

6.7 Exclusion of predefined file types

Below the time sliders the checkbutton `Activate file type filter` is placed. Activating this button, all files of types are excluded that are from the list defined in the `File type filter` entry in the preferences tab. Typically, those file types are `.html,.zip` or even video data extensions. Please always define the entries with the leading `.` and separate them with a white space. Unchecking this button de-activates the filtering.



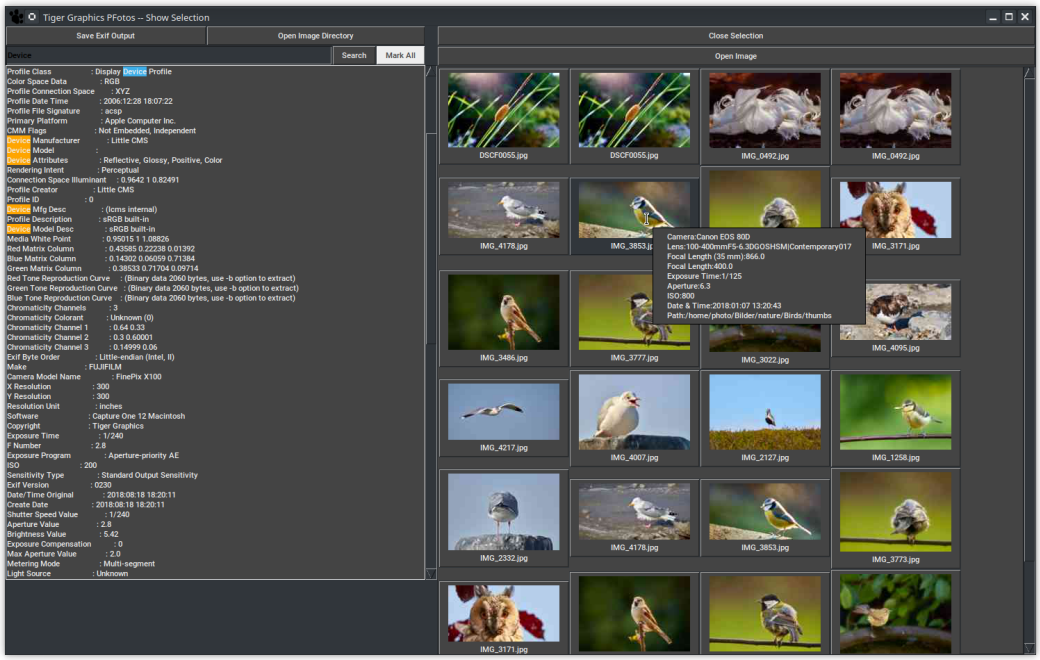
Exclusion of files of defined types

6.8 Histogram Bins

The histogram bins show below the title line a set of three radio buttons `all`, `none` and `manual`. `all` selects all entries (set at start); `none` de-selects all entries at once and finally, `manual` is automatically set when one of the bin entries is de-selected by the check buttons at the histogram lines. Each change of a selection initiates a new filtering and update of **all** displayed histograms. Applied filters persist changing between the `Cams & Lenses` and `Image Data` tab.

6.9 Show Selection

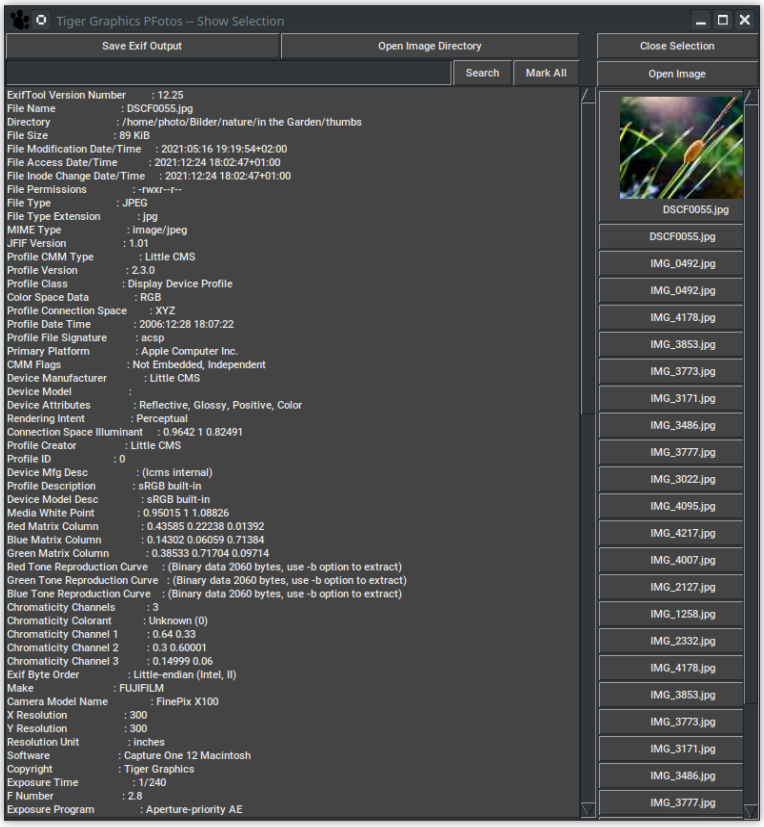
If the number of selected images is below the maximum number of images to be shown as tiles as set in the preferences tab, pressing the button `Show Selection` opens a new window:



The Selection window with thumbnails and the EXIF data of the selected image

On the right hand side a set of thumbnail buttons for each image in the selection is shown. This area is scrollable for a larger number of images. Clicking of the these buttons results in an update of the left column showing the complete EXIF information provided by the image (this left column is also scrollable).

Putting the mouse pointer over a thumbnail displays the short EXIF information of the image as balloon tool tip. If the number of selected images exceeds the value given in the preferences tab for `Maximum images to show in tiled selection`, pressing the button `Show Selection` opens a new windows in the following form:



The Selection window with the list of images, EXIF data and a thumbnailed button

In the right column a set of buttons for the images in the selection is shown. The column is scrollable for a larger number of images. Clicking of the these buttons results in an update of the left column showing the complete EXIF information provided by the image (the left column is also scrollable). Also the thumbnail of the image is shown on the button just being clicked. Above the thumbnails in the right column, the button `Open Image` allows starting the defined image viewer for the selected image.

On top of the left columns (the EXIF information area) a row with two buttons is placed:

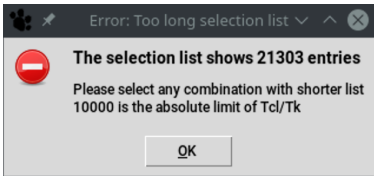
Clicking the button `Save EXIF Output` stores the displayed EXIF output to a text file in the same data directory where the **PFotos** EXIF data files are stored. The button `Open Image Directory` starts the operating system's default file manager at the directory where the original image was found. Incase that either the original image cannot be found or the containing directory is not accessible, both buttons, as well, as the `Open Image` button are disabled.

Above the the EXIF information area a search pattern can be input. A classical search then starts to through the detailed EXIF information by pressing the *Return*-key or clicking the `Search` button right of the input field. On the right hand side of the `Search` button the `Mark All` button toggles highlighting of all places of finding of the search pattern. The search pattern itself and the marking persist selecting another image (see above). Entering the text field of the search pattern switches of the marking.

Note: Clicking the button `Open Image` starts the defined image viewer for the selected image. Starting the defined image viewer for the selected image is also possible but differs for the different operating systems:
Microsoft Windows and **OpenSuse Linux** : right click on the thumbnail
MacOS : middle mouse button click with the `alt` (*Option*)-key pressed.

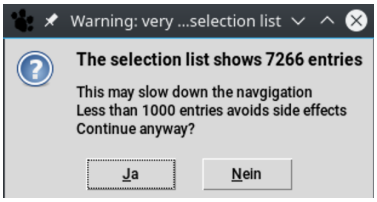
6.10 Limitations

Many images in the tiled selection view: Depending on processor speed, available memory and types of selected images the generation of thumbnails may take some minutes also depending of the operation system. A reasonable value to be set in the preferences tab is 40.
Too many images: If a selection contains more than 10000 images, an error message is displayed and the operation is cancelled.



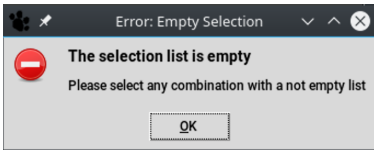
The list of images is too long for further processing

Lots of images: If a selection contains more than 4000 images, a warning message is displayed but the operation may be continued. There is no risk of data corruption, at all. But some displays (scroll lists, sliders, etc.) may show undefined behaviour.



The list of images is very long. Some widgets may get unstable.

Empty selection: If a selection is empty, an error message is displayed and the operation is cancelled.

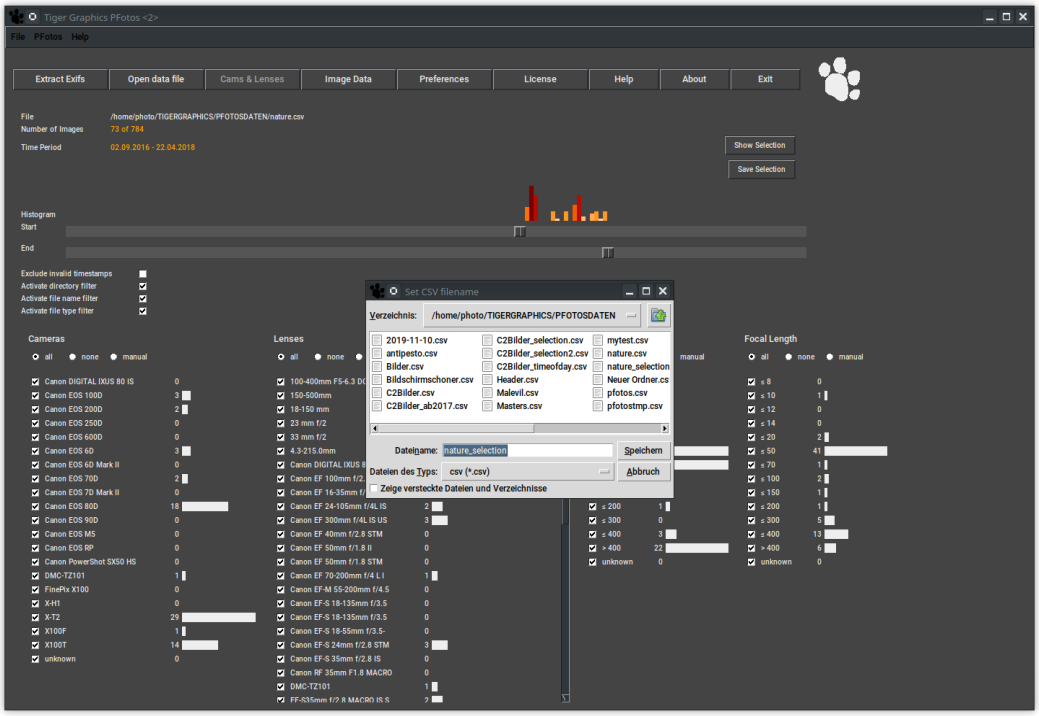


The list of images is empty

Image not found: If an original image is stored on a network drive or a removable device which may be unavailable when looking for thumbnail and detailed EXIFs an error message is displayed and buttons which are dependant on the access to the image are disabled.

6.11 Save Selection

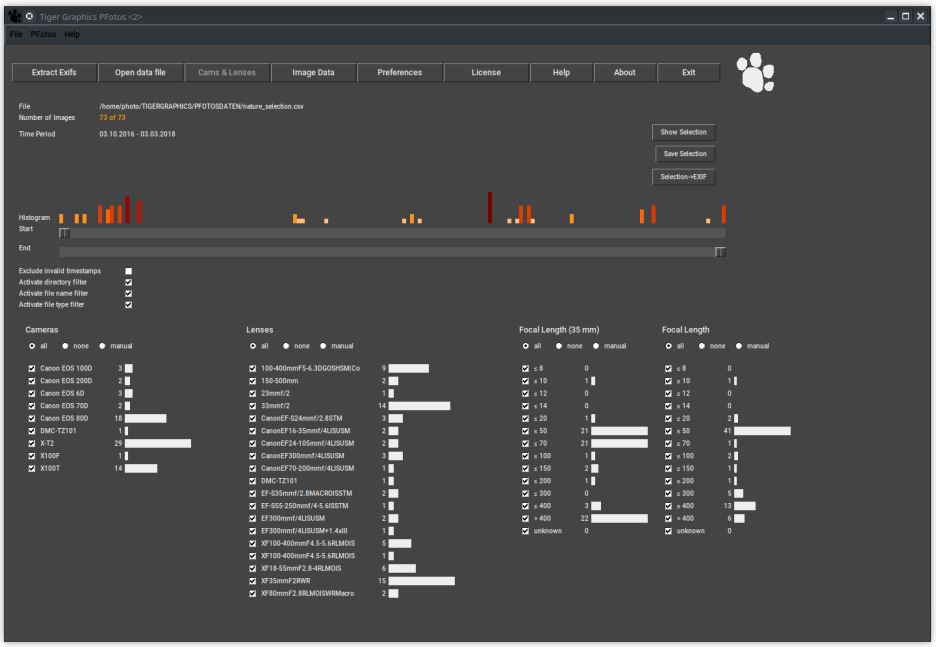
By pressing the button `Save Selection` opens a file selection window to save the currently generated selection of images to a **PFotos** data file for later and special use.



The Save Selection dialogue

6.12 Integration of an external ExifToolGUI

As soon as and only if in the preferences tab an external ExifToolGUI has been defined a new button `Selection->EXIF` appears.



The new Selection $->$ EXIF button

The big difference is that the **PFotos** function `Show Selection` just displays the Exif information of the images, whilst sending over the selection to the external ExifToolGUI may deliver the original images to a tool that is capable to modify, erase or correct Exif data. So take care when doing so.

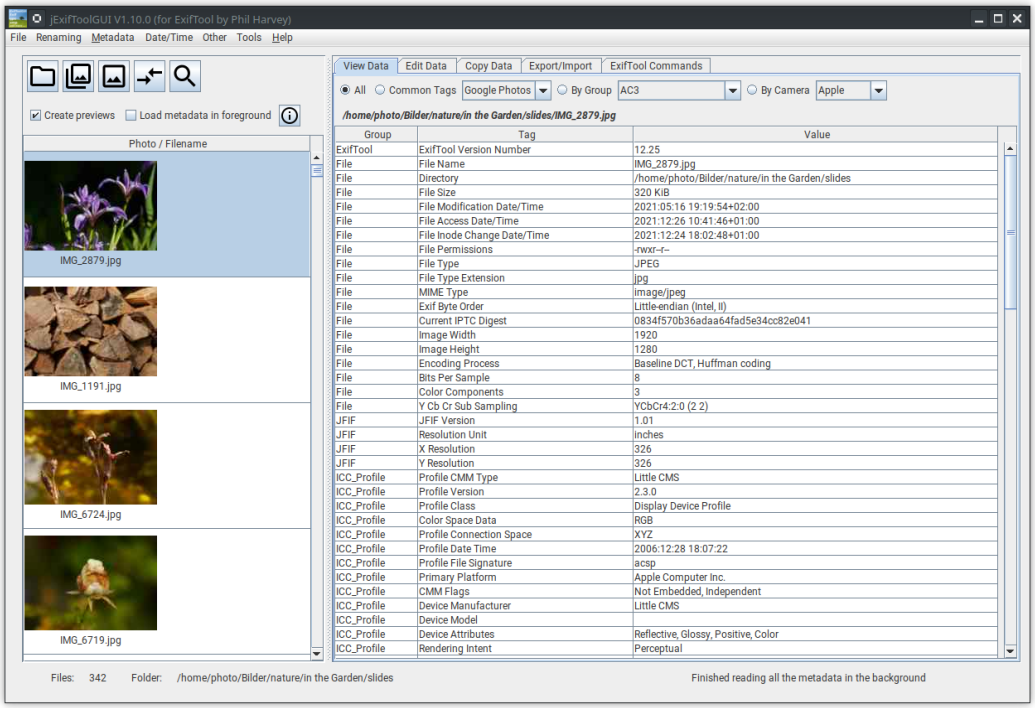
The following section shows the integration of the ExifToolGUI[1] as a 'containerised' Application image on Linux.

In this case simply the path to the AppImage `/home/opt/jExifToolGui-1.20.0-x86_64.AppImage` was selected via `Select ExifToolGUI`. The same method applies for **Microsoft Windows** .

When trying so on **MacOS** , we cannot come to the solution by the `Select ExifToolGUI` button, because the navigation of the file selector does not let us select the application which is `jExifToolGUI.app` in the Applications directory. In this case we need to enter the complete path to the execuable `jexiftoolgui` which finds at

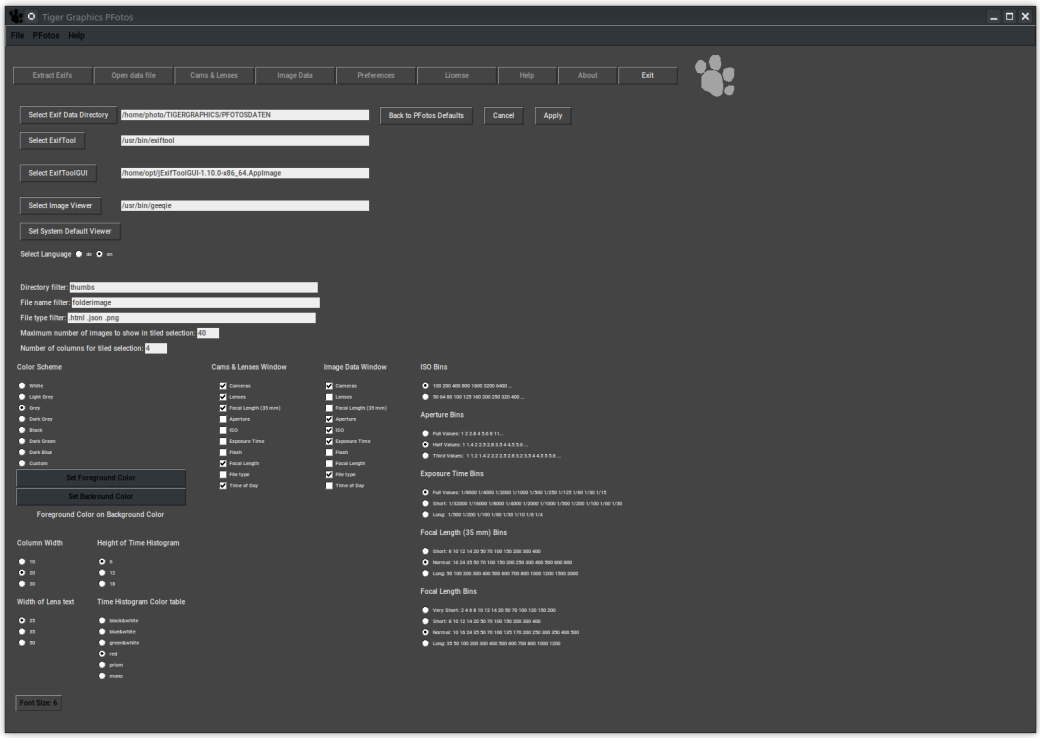
[1] https://hvdwolf.github.io/jExifToolGUI/

`/Applications/jExifToolGUI.app/Contents/MacOS/jexiftoolgui`
for the here presented ExifToolGUI.



The Main Window of the ExifToolGUI with a selection of more than 300 images sent over

7 Preferences



The Preferences Tab

In the preferences tab a lot of settings are possible, so let's start from top:

7.1 Environment

Line `Select Exif Data Directory`: Here, please select the directory where the **PFotos** EXIF data files shall be stored or are stored. This implies that there might be different data directories, in case of need. The generation of a new directory from the selection dialog depends on the operating system. It should be possible on **Microsoft Windows** . On **Linux** and **MacOS** a new directory entry shall be done outside the **PFotos** application. The selected directory is shown right hand of the button, where the path can also be edited.

Line `Select ExifTool`: Here, please select the executable for the exiftool. The selected executabel is shown right hand of the button, where the path can also be edited.

Line `Select ExifToolGUI`: Here, please select the executable for the ExifToolGUI. The selected executabel is shown right hand of the button, where the path can also be edited.

Line `Select Image Viewer`: Select an image viewer on **Microsoft Windows** and **Linux** platforms. For **MacOS** , the default method `open` is the best selection and can simply be confirmed, but on Linux the system's default method `xdg-open` refers to the MIME-settings for the different image types which may lead to some strange results for RAW images, such, it is recommended to select your preferred image viewer hopefully capable to show all your cameras' RAW images. The selected image viewer respectively the selected open method is shown right hand of the button.

Button `Set System Default Viewer`: Set the open method for images to the system's default.
The result is shown right hand of the `Select Image Viewer` button.
Button `Back to PFotos Defaults`: This button resets some central settings to predefined defaults like the `Exif Data directory`,
the `Image Viewer`, the `Background Color` and the `Font Size` and the `Bin` settings.

Button `Cancel`: Discards all changes in the settings and returns to the `Cams & Lenses` tab.

Button `Apply`: Applies all changes in the settings and returns to the `Cams & Lenses` tab.

7.2 Localization, User Interface and pre-defined filters

Radio Buttons `Select Language`: Select the language for the entire user interface.

Entry line `Directory filter`: Define here a list of directories from which files shall be excluded from the selection on request. Please separate the entries by white spaces.

Entry line `File name filter`: Define here a list of file names (file root names or parts of root names without extensions) which file names shall be excluded from the selection on request. Please separate the entries by white spaces.

Entry line `File type filter`: Define here a list of file types (extensions) which files shall be excluded from the selection on request. Please define entries always with the leading `.` and separate the entries by white spaces.

Entry line `Maximum images to show in tiled selection`: Define here the maximum number of images to be shown in the new tiled selection viewer. The default value is 40, which is a good number to start with. If the number of selected images exceeds this value the selection window will be displayed with a list of simple buttons and only one thumbnail will be generated at a time. The input value in this entry shall be a positive number limited to 100000.

Entry line `Number of columns for tiled selection`: Define here the number of columns the thumbnail tiles shall be presented. The input value in this entry shall be a positive number limited to 32.

Radio Buttons `Background color`: Select the background color of the entire user interface. The selection influences complete color schemes to provide good visibility of all information.
The radio button `Custom` refers to the user selected colors which can be adjusted with the two buttons `Set Foreground Color` and `Set Background Color` below. The currently defined selection is shown on the label
`Foreground Color on Background Color`.
Note: Take care for good visibility of the custom selected colors; we do not avoid selecting ”black on black” or ”white on white”.... But you're not lost: Control elements will

possibly be unreadable but when you move the mouse pointer over them, they'll get highlighted and thus readable. In case of a "white on white" scenario again navigate to the preferences tab and select one of the pre-defined color schemes.
Note: Since the apperance and operation of the color selector differs very strong between the different operating systems, we provide no description here.

Radio Buttons `Column Width`: Sets the available length for the histogram bars. `10` shortest; `30` longest.

Radio Buttons `Width of Lens text`: Sets the limit for lens descriptions in the "Lenses" bin. The reason is that lens descriptions by the manufacturers may get very long.
`25` shortest; `50` longest. When a lens description is clipped according to the selected setting, the full imformation is shown when the mouse cursor is put on the clipped text.

Radio Buttons `Height of Time Histogram`: Sets the maximum height for the time histogram bars. `6` shortest; `18` longest.

Radio Buttons `Time Histogram Color table`: Selects a color table for the time histogram bars. Check out your preferred one. (red is nice)

Menu Button `Font Size`: Select the font size for all text outputs in the user interface. The selected font size is shown on the button.

Note: All selections will get effective after pressing the `Apply` button.

7.3 Information selection

Radio Buttons `Cams & Lenses Window` and `Image Data Window`: Select the information bins to be displayed in the main tabs.

7.4 Histogram Bin Breakup

Radio Buttons for breakup settings of the numerical bins for `ISO`, `Aperture`, `Exposure Time`, `Focal Length (35mm)` and `Focal Length`.
Please check what suits your desires best.

8 Menues

Besides the functionality of the buttons the file menue offers the possibility to write histogram csv-files from the filtered data.

8.1 Rename Data file

Select an existing data file and give it a new name.

8.2 Save Selection

Select the storage location and file name for the save. The default location is the defined csv data directory. The default file name is `<name_of_the_exif_datafile>_selection.csv`. The currently defined selection will be stored as **PFotos** datafile.

8.3 export to TXT

Select the storage location and file name for the save. The default location is the defined csv data directory. The default file name is `<name_of_the_exif_datafile>_export.txt`. The currently shown histogram will be stored as plain text file.

9 Known Issues & ToDos

We found some issues to be recognized as long as they are not solved in future versions of **PFotos** :

9.1 Thumbnail size

Currently, the thumbnail display size in the selection window is fixed and cannot be changed. This is on the ToDo list for future versions, but upscaling of embedded thumbnails does not look really nice.

9.2 Directory Browsing

Hopefully, also in a future version it shall be possible to additionally refine the selection of images by sub-directories if there would be a structure in the **PFotos** datafile or in an ad-hoc drag&drop-selection.

10 About

We, Cora and Frank, are photo amateurs (nowadays called: enthusiastic amateurs ☺) and (semi-)professional software engineers. If you'd like to get an impression who you are dealing with have a look on our website (German site)

`https://tigergraphics.homelinux.org/`

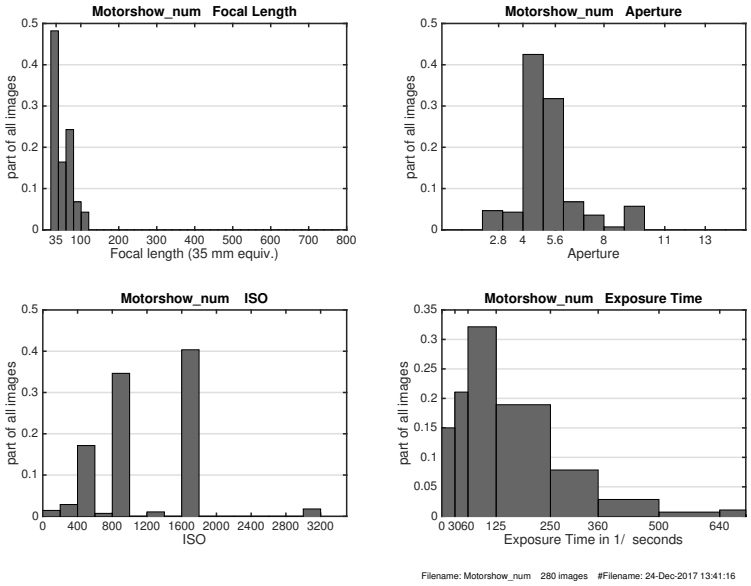
and on our galleries

`http://tigergraphics.jalbum.net/`

The name **PFotos** is a composition of the German word for paw 'Pfote' and the German word for images 'Fotos'. The paw and the name Tiger Graphics came up many years ago as we started with software development. It was inspired by the book 'Oh wie schön ist Panama' written by Janosch.The story how we came up to develop **PFotos** is written down below. **PFotos** is fully developed in our free time, mainly in the christmas holidays 2017. Thus, further add ons and bug fixes will take some time (at least until next christmas). So feel free to do it by yourself under the GNU public license. If you have any questions, please contact us by eMail frank.hamberg@gmx.de (no social media available).

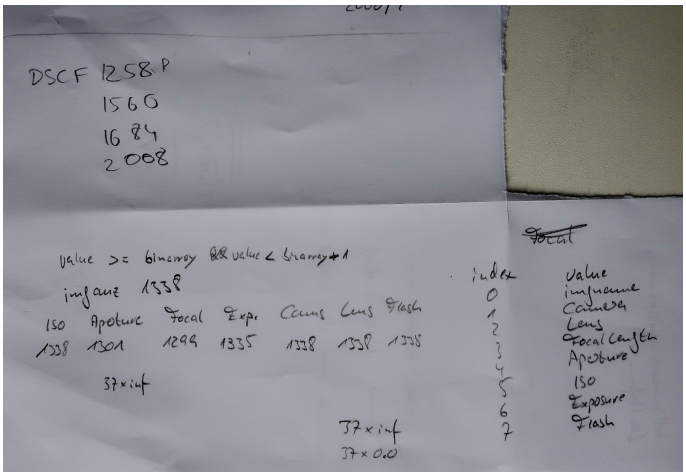
10.1 PFotos - how it began ...

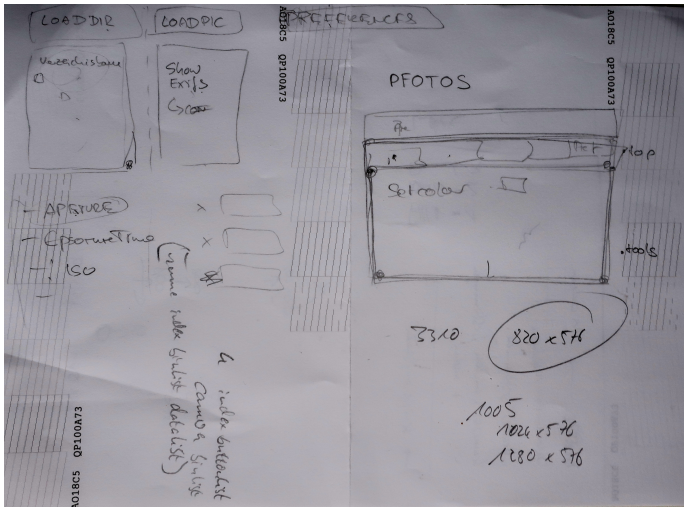
It was in 1992 as we coded the software packages **CEMoS** and **MoViE** at the university. 25 years later, in 2017, a completely different problem appeared. We decided to go to Essen Motorshow again. Which cameras and lenses shall we take with us? Which ones did we take with us two years ago? Some hours struggeling with Matlab and 1000 dirty words later we had the result in the paws:



But getting those information should be quite more easy, more universal and comfortable. Thus, we remembered the good old times at the university: 'Let's do it in Tcl/Tk'.

Short sketches outline the project and in November 2017 we started:





By the way: the images from the Motorshow are quite nice:



http://tigergraphics.jalbum.net/Tiger%20Graphics%20Cars/